ORION ONE-AR
GNSS RECEIVER

Starlight-Grade Camera, Immersive AR Stakeout

VISUAL AR STAKEOUT

The Orion ONE-AR revolutionizes stakeout processes with its visual AR (Augmented Reality) guidance. Equipped with a 2MP starlight-grade camera, it ensures clear visuals even in low-light conditions, while real-time AR guidance helps surveyors easily pinpoint and mark locations on-site. This feature largely simplifies stakeout tasks, allowing for 50% faster, more efficient work compared to traditional methods.

COMPACT PRECISION IN YOUR HAND

Despite its compact design (Φ107 mm × 58.7 mm), the Orion ONE-AR delivers top-tier accuracy in a palm-sized form. Full-constellation GNSS tracking and anti-interference capability allow for high-precision positioning results, even in complex or constrained environments, all while maintaining portability for easy fieldwork.

VERSATILITY AND COMPLETE FUNCTIONALITY

Designed for versatility, the Orion ONE-AR integrates immersive AR stakeout, tilt surveying, NFC/WiFi/Bluetooth/USB flexible transmission, built-in web UI, 8GB static storage, rugged IP67 protection and enhanced internal UHF radio, making it the perfect choice for all kinds of surveying tasks and ensuring that every project can be completed with precision and efficiency.

SATELLITES TRACKING

Channels	1408
BDS	B1I, B2I, B3I, B1C, B2a, B2b
GPS	L1C/A, L1C, L2C, L2P(Y), L5
GLONASS	G1, G2, G3
Galileo	E1, E5a, E5b, E6
QZSS	L1C/A, L1C, L2C, L5
NavIC	L5
SBAS	WAAS, EGNOS, SDCM, BDSBAS, GAGAN
L-Band	Support
Cold start	<30s
RTK Initialization Time	<5s(typical)
RTK initialization reliability	>99.9%
Re-acquisition	<1s

ACCURACY

Standalone	1.5m Horizontally 2.5m Vertically
DGPS	0.4m Horizontally 0.8m Vertically
Static Post-processing	2.5mm+0.5ppm Horizontally 5mm+0.5ppm Vertically
RTK	8mm+1ppm Horizontally 15mm+1ppm Vertically
PPP	5cm Horizontally 10cm Vertically
SBAS	< 1.0 m 3D RMS
Time Accuracy	20ns
Tilt Surveying	< ±2.5cm, within 60° Tilt Range
AR Stakeout	8mm+1ppm Horizontally 15mm+1ppm Vertically

DATA FORMAT

Data Output Format	- NMEA-0183 - RINEX 3.02/3.04 - Binary Format *.xyz
Data Update Rate	1～50Hz Selectable
Correction Data Format	- RTCM v3.3/3.2/3.1/3.0
Supported Protocols	Ntrip client, Ntrip Server, Ntrip Caster, TCP, UDP

COMMUNICATION

UHF Modem[1]	- Working Range: Up to 15km with optimal conditions - Frequency Range: 410-470MHz - Protocol (TX & RX): LoRa - Protocol (RX): TRIMATLK, SATEL, TRANSEOT, TRIMMARK3, etc. - Channel Spacing: 25KHz - Transmit Power: 0.5W~2W Selectable
Bluetooth	BT4.0 Dual Mode

NFC	Support NFC Connection
WiFi	802.11 a/b/g/n/ac
Interface	- 1 Type-C Interface for Data Transmission and Charging - 1 SMA Connector for UHF Antenna

VISUAL SENSOR

Sensor Type	Camera
Pixel	Global Shutter with 2 MP
Frame	30 fps
FOV	75°
Feature	Starlight-grade Camera, HD Capture in Weak Light Environment

USER INTERACTION

Front panel	- 3 LED indicators indicating satellite tracking, differential data transmission and power - 1 button for power on/off
WebUI	- Accessible via Wi-Fi - Support Configuration, Status Checking, Data Transfer, Data Storage and System Upgrade

ELECTRICAL

Power Consumption	1.8 W[2]
Input Voltage	DC 5-15V
Battery	- 4200 mAh, up to 12 Hours Working Time - Fast Charge of 3 Hours Charging Time

PHYSICAL

Size	Φ107 mm × 58.7 mm
Weight	547 g
Storage	8 GB[3]
Housing Material	Magnesium-aluminum Alloy

ENVIRONMENTAL

Working Temperature	-40℃ to + 65℃
Storage Temperature	-55℃ to + 85℃
Humidity	100% Non-condensing
Waterproof & Dustproof	IP67
Drop	Designed to Survive a 2m Drop onto Concrete

1　The enhanced UHF base is not compatible with normal UHF rovers on the market. For different user needs, SingularXYZ also provides normal UHF as an option compatible with UHF of other brands. Please clarify your requirements when placing the order.

2.　The power consumption varies with the different work modes.

3.　Storage can be expanded to 32GB according to user demands.